

● PRINTER RUSH ●

(PTO ASSISTANCE)

Application : <u>09/742:421</u>	Examiner : <u>Bocure</u>	GAU : <u>2631</u>
From: <u>MR</u>	Location: <u>IDS</u> FMF FDC	Date: <u>04-04-05</u>
Tracking #: <u>06048136</u>		Week Date: <u>12-06-04</u>

DOC CODE	DOC DATE	MISCELLANEOUS
<input type="checkbox"/> 1449		<input checked="" type="checkbox"/> Continuing Data
<input type="checkbox"/> IDS		<input type="checkbox"/> Foreign Priority
<input type="checkbox"/> CLM		<input type="checkbox"/> Document Legibility
<input type="checkbox"/> IIFW		<input type="checkbox"/> Fees
<input type="checkbox"/> SRFW		<input type="checkbox"/> Other
<input type="checkbox"/> DRW		
<input type="checkbox"/> OATH		
<input type="checkbox"/> 312		
<input checked="" type="checkbox"/> SPEC		

[RUSH] MESSAGE: ① Parts of text/specification are illegible, especially the ones that have hold-up / hold-down dates. Please provide clearer copies.

② Provisional applications 60/171, 604 and 60/243,727 are listed in palm sheet, but not in specification.

Thank you,
MR

[XRUSH] RESPONSE: ① Use ~~spec~~ first spec dated 12/20/00

② Corrected.

INITIALS: DS

NOTE: This form will be included as part of the official USPTO record, with the Response document coded as XRUSH.
REV 10/04

742,421

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INTERFERENCE SUPPRESSION IN CDMA SYSTEMS

DESCRIPTION

TECHNICAL FIELD:

The invention relates to Code-Division Multiple Access (CDMA) communications systems, which may be terrestrial or satellite systems, and in particular to interference suppression in CDMA communications systems.

BACKGROUND ART:

Code-Division Multiple Access communications systems are well known. For a
10 general discussion of such systems, the reader is directed to a paper entitled "Multiuser
Detection for CDMA Systems" by Duel-Hallen, Holtzman and Zvonar, *IEEE Personal
Communications*, pp. 46-58, April 1995.

In CDMA systems, the signals from different users all use the same bandwidth, so each user's signal constitutes noise or interference for the other users. On the uplink (transmissions from the mobiles) the interference is mainly that from other transmitting mobiles. Power control attempts to maintain the received powers at values that balance the interference observed by the various mobiles, but, in many cases, cannot deal satisfactorily with excessive interference. Where mobiles with different transmission rates are supported within the same cells, the high-rate mobiles manifest strong interference to the low-rate mobiles. On the downlink (transmission towards the mobiles) transmissions from base-stations of other cells as well as strong interference from the same base-station to other mobiles may result in strong interference to the intended signal. Downlink power control may be imprecise or absent altogether. In all these so called near-far problem cases, the transmission quality can be improved, or the transmitted power reduced, by reducing the interference. In turn, for the same transmission quality, the number of calls supported within the cell may be increased, resulting in improved spectrum utilization.

Power control is presently used to minimize the near-far problem, but with limited success. It requires a large number of power control updates, typically 800 times per second, to reduce the power mismatch between the lower-rate and higher-rate users. It is desirable to reduce the number of communications involved in such power control systems, since they constitute overhead and reduce overall transmission efficiencies. Nevertheless, it is expected that future CDMA applications will require even tighter

This application claims benefit of provisional apph
60/171,604 12/23/94 and provisional apph
60/243,097 10/30/2000